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EXAMINER

DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/816,691	Applicant(s) BLOMILEY ET AL.	
	Examiner Rakesh K. Dhingra	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 9,10,15-21,23-29,32,33,35,36,38,39,43 and 44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-8,11-14,22,30,31,34,37 and 40-42 is/are rejected.
- 7) ☒ Claim(s) 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Election/Restrictions

Applicant's election without traverse of Species 1 in the reply filed on 04/07/2006 with claims 1-8, 11-14, 22, 31, 34, 37, 40-42 reading on the elected species or generic thereto, is acknowledged.

Claims 9, 10, 15-21, 23-29, 32, 33, 35, 36, 38, 39, 43, 44 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected species. Claim 30 has been examined since claim 31 (pertaining to elected species) depends upon claim 30.

Specification

The disclosure is objected to because of the following informalities:

Paragraph 0050, line 7 – “susceptor 41 “ may please be replaced with “substrate 41” as per Figures 3, 4;

Paragraph 0055, line 10 – “first portion 56” may please be replaced with “first portion 55” as per Figure 8.

Appropriate correction is required.

Claim Objections

Claim 37 is objected to because of the following informalities:

Line 1 recites “the method of claim 1” whereas claim 1 recites an apparatus claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2-4, 7, 8, 11, 22, 37, 40, 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Lei et al (US patent No. 5,556,476).

Regarding Claim 1: Lei et al teach an apparatus (Figures 2-7) including a support pedestal (susceptor) 18 for receiving a substrate 24 to be deposited upon, comprising: a body having a substrate receiving side, the substrate receiving side comprising a face having a pocket (substrate receiving recess) 280 formed therein, the pocket (recess) 280 comprising an outer peripheral sidewall (formed by inner circumferential face of hoop 282); and at least three guide pins (projections) 224 extending outwardly from a portion of the face (of hoop 282), the projections respectively comprising a radially inner sidewall which extends outwardly from the pocket (recess outer peripheral sidewall) to a projection upper surface (Figure 6 and column 3, lines 20-40 and column 12, lines 25 to column 13, line 35).

Regarding Claims 2-4: Lei et al teach that face (upper surface of hoop 282) is annular and is substantially planar but for the guide pins (projections) 224 [Figure 6].

Regarding Claims 7, 8: Lei et al teach that pocket (substrate receiving recess) 280 comprise a base (upper surface of pedestal 18) and recess outer peripheral walls extend perpendicularly from the recess base (pocket 280) [Figure 6 and column 12, lines 45-50].

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Regarding Claim 11: Lei et al teach that guide pins (projections) 224 are received about a circle on the face portion (top face of hoop 282) [Figure 6].

Regarding Claim 22: Lei et al teach the pedestal (with hoop 282) [susceptor] has an outermost peripheral edge and the guide pins (projections) 224 respectively have an outermost peripheral edge, the guide pins (projections) outermost peripheral edge being received radially inward of the body outermost peripheral edge (Figure 6).

Regarding Claim 37: Lei et al teach the projection upper surface of guide pins (projections) 224 has an uppermost elevation which is received higher than an uppermost surface of a substrate 24 for which the susceptor is designed when said substrate is received by said recess 280 (Figure 6).

Regarding Claim 40: Lei et al teach that at least a portion of the outer peripheral sidewall 230 of recess (pocket 280 with hoop 282) is angled radially downward toward the substrate receiving recess (Figure 7a and column 13, lines 55-68).

Regarding Claim 41: Lei et al teach the pocket (substrate receiving recess) 280 comprises a base, a first portion of the recess outer peripheral sidewall (inner wall if hoop 282) extending perpendicularly relative to the recess base (pocket) 280, a second portion of the recess outer peripheral sidewall extending from the first portion and being angled radially downward toward the substrate receiving recess (pocket) 280 {Figures 6, 7a and column 13, lines 55-68}.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lei et al (US Patent No. 5,556,476) in view of Mahawili (US Patent No. 6,530, 994).

Regarding Claim 5: Lei et al teach all limitations of the claim except substrate receiving recess is annular.

Mahawili teach an apparatus (Figures 8, 9) that includes a platform (substrate support) 310 that has an annular substrate support surface (recess) 316 having a central opening 320 (column 8, lines 25-60).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use an annular recess for supporting a substrate as taught by Mahawili in the apparatus of Lei et al to enable unimpeded backside heating of substrate and also to permit lifter pins lift the substrate after processing (column 8, line 45 to column 9, line 10).

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Regarding Claim 6: Lei et al in view of Mahawili teach that face portion (upper surface of hoop 282) is annular (Lei et al - Figure 6).

Claims 12-14, 30, 31, 34, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lei et al (US patent No. 5,556,476).

Regarding Claims 12-14: Lei et al teach all limitations of claims including that alignment of substrate (with the help of guide pins 224) is critical in order not to obstruct flow of purge gas to substrate.

Lei et al do not teach size/proportion of the guide pins (projection) with reference to face portion circle.

It would be obvious to optimize the arcuate size of guide pin (projections) as taught by Lei et al in view of process variables like purge gas flow tolerances and variables like size of wafer and contact area of wafer with guide pins (depending upon material of wafer) to enable passage of purge gas over the entire edge of the substrate [column 4, lines 8-25].

In this connection courts have ruled (Case law):

“It is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).”

“It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable through routine experimentation in the absence of a showing of criticality. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).”

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. It would have been obvious to one having ordinary skill in the art to have determined the optimum values of the relevant process parameters through routine experimentation in the absence of a showing of criticality. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).”

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Regarding Claims 30, 31, 34: Lei et al teach all limitations of claims including that height of pocket (recess outer peripheral sidewall) 280 with respect to thickness of substrate is variable depending upon gas flows 286, 288 for purge gas and deposition gas respectively. Thus combined elevation length (sum of recess outer peripheral sidewall and radially inner sidewall) would also be variable and it would be obvious to optimize the height of pocket (recess outer peripheral sidewall) 280 and also the combined elevation length (column 14, lines 15-35) as per process variables like purge and deposition gas flows.

Regarding Claim 42: Lei et al teach all limitations of the claim including that upper inner edge of hoop 282 (radial extent of second portion) is angled to ensure that a misaligned or eccentric substrate does not contact the hoop 282 (recess outer peripheral wall). It would be obvious to optimize the angle of upper inner edge of hoop (radial extent of second portion) as taught by Lei et al to avoid any contact between a misaligned wafer and radial inner sidewall.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rakesh Dhingra



Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763